



ABSTRACT

1 A catheter for emitting radiation is disclosed,
comprising a catheter shaft and an x-ray unit attached to the
5 distal end of the catheter shaft. The x-ray unit comprises an
anode and a cathode coupled to an insulator to define a vacuum
chamber. The cathode is preferably a field emission cathode of
graphite or graphite coated with titanium carbide, for example.
The anode is preferably tungsten and the insulator is preferably
10 pyrolytic boron nitride. The x-ray unit is preferably coupled to
a voltage source through a coaxial cable. The anode is
preferably a heavy metal such as tungsten. The cathode may also
be a ferroelectric material. The x-ray unit can have a diameter
less than about 4 mm and a length less than about 15 mm. Methods
15 of use of the catheter are also disclosed. The catheter of the
present invention can be used to irradiate the site of an
angioplasty procedure to prevent restenosis. It can also be used
to treat other conditions in any vessel, lumen or cavity of the
body.

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